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BORTZ, LOUIS C., Amoco Production Co.

**Hydrocarbons in the Northern Basin and Range,
Nevada and Utah**

Occurrences of surface and subsurface hydrocarbons in the northern Basin and Range suggest that oil and gas have been generated in several areas in this province. Documented surface occurrences include: 1) oil in ammonites found in Triassic shales in the Augusta Mountains northeast of Dixie Valley, 2) the Bruffey oil and gas seeps and asphaltite dikes in Pine Valley, 3) Diana's Punch Bowl (probably gas seep) in Monitor Valley, 4) in the ranges surrounding Railroad and White River valleys, droplets of oil are found in goniatites (Mississippian Chainman shale) and part of the Sheep Pass formation is oil stained at one locality, 5) oil shale occurs in the Tertiary Elko formation near Elko and the Ordovician Vinini formation in the Roberts Mountains, 6) numerous outcrops have a petroliferous odor and a few are oil stained.

Subsurface oil and gas shows are more widespread, but most have been found in the same general area as the surface shows. However, there are some important exceptions.

To date all commercial and noncommercial oil and gas fields in the northern Basin and Range are located near the sites of the surface hydrocarbons. This relationship emphasizes the importance of source rock studies to exploration in this province. Prospective areas that lack surface hydrocarbons might be delineated by source rock studies.

A total of eleven oil and gas fields have been discovered in this province of which only three or four can be classed as commercial fields. All of these fields are located in Neogene basins — no fields have been found in an exposed mountain range. The significant fields have some additional common characteristics: 1) the traps are associated with a Tertiary unconformity, 2) the reservoirs have a relatively thick oil column, 3) fractures usually enhance the reservoir quality. Fields in Railroad Valley and the Great Salt Lake are used to illustrate these and other characteristics.